Spring 5-2016

The Impact of Amputation on Body Image

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The Impact of Amputation on Body Image

by

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A Thesis
Submitted to the Honors College of
The University of Southern Mississippi
in Partial Fulfillment
of the Requirement for the Degree of
Bachelor of Science in Nursing
in the Department of Nursing

May 2016

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Abstract

There is a lack of history regarding appearance-related concerns in healthcare. There are roughly two million people living with limb loss in the United States with nearly 185,000 amputations occurring each year. Alterations in body image are due to individuals being unable to adapt to appearance change and can take them far from their ideal body image. It has previously been discovered that amputees generally disclose negative feelings regarding their bodies.

The sample included 207 adults aged 21 years and older with lower-limb amputations. The participants completed a survey composed of demographics and the Amputee Body Image Scale. Statistical analysis was computed using a one-way ANOVA. Participants with two lower limb amputations versus one lower limb amputation experienced lower body image [$F (1, 205) = 4.150$, $p = 0.043$]. A significant difference existed in length of time since loss of limb. Participants were more dissatisfied with their body image six to ten years after amputation as opposed to other time frames [$F (4, 202) = 4.316$, $p = 0.002$]. Among people who reported losing their limb, there was a statistically significant relationship between vascular and other causes [$F (5, 194) = 2.86$, $p = 0.016$].

Amputees need emotional support. It is crucial that nurses encourage patients to confront their injuries and expose disfigurements because this can have a positive effect when helping patients adjust. The findings confirm that patients undergoing amputation experience psychological distress related to altered body image.

Keywords: Body image, amputation, quantitative, Amputation Body Image Scale

Dedication

I would like to dedicate this thesis to my dad, who serves as the inspiration for my interest and commitment to this research. As an amputee and compassionate healthcare professional, you have encouraged me to always do my best, overcome obstacles, never give up, and chase my dreams of becoming a nurse. Throughout my college years, you have been there to pick me up in rough times and celebrate with me in good times. I speak for many when I say that you have been such a light in my life! Thank you for your constant support, encouragement, and love!

Acknowledgements

I would like to thank my mom for being my biggest supporter. Mom, I couldn't have done it without you! From the very beginning, you have assured me that being successful in nursing school while doing research and writing a thesis was possible, and you were right! It wasn't easy, but having you by my side made it much more bearable. Thanks for the constant reminder that hard work always pays off!

I would also like to thank my thesis advisor Dr. Elizabeth Tinnon for agreeing to take this journey with me, keeping me on my toes throughout the entire process, and believing in me when I was down. I will never forget the hours we spent in your office but more importantly how great it felt to hear you say you were so proud of me! I want you to know that it was the encouragement I needed on days where I felt overwhelmed and exhausted. Thank you for keeping the high expectations you set at our first meeting; I have enjoyed the journey!

Lastly, I would like to thank my friends for their patience and positivity. While I'm not much of a complainer, I know that a large part of what I discuss is nursing school and my research. Thanks for listening to me, motivating me, and still including me in fun every once in a while!

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List of Abbreviations

ABIS	Amputee Body Image Scale
ANOVA	Analysis of Variance
IRB	Institutional Review Board

Chapter 1: Introduction

The concept of body image encompasses the way in which a person feels that his or her body image will affect interactions, playing a significant role in social and interpersonal relationships (Bessell, Dures, Semple, and Jackson, 2012). In this study, body image is defined as "the mental picture people have of their physical self, and equally important, the mental picture they believe others have of them" (Bessell, Dures, Semple, Jackson, 2012, p. 1138). This mental image incorporates perceptions of and attitudes towards appearance, functionality, and sexuality. The concept also includes a person's opinion of how their body image influences intimate and social interactions, allowing it to significantly affect various relationships (Bessel et al., 2012). Body image is not permanent but is characterized by constant change as a result of development and the environment (McRobert, 2012). The changes in appearance that many people endure as a result of trauma or disease can completely alter one's pre-existing body image and take him or her far from his ideal body image. For example, decreased body image can result in poor social skills or anxious and distracted behavior where individuals attempt to hide their feature in some way (Bessell et al., 2012). Alterations in body image are due to an individual being incapable to adapt to the appearance change (McRobert, 2012). These changes in body image set up "a series of emotional, perceptual, and psychological reactions" (Breakey, 1997, p. 58).

One reason for lack of history regarding appearance-related concerns in healthcare is the dominance of the biomedical model, which focuses on the separation of mind and body. An integrated model is currently the recommended approach that

addresses body image with appearance concerns. In the present day, there is growing recognition of the importance of appearance (Bessell et al., 2012).

Focusing on one specific change in appearance, the Amputee Coalition of American reports that there are roughly two million people living with limb loss in the United States with nearly 185,000 amputations occurring each year. Approximately 54% of amputations are due to vascular diseases such as diabetes and peripheral artery disease, while 45% are the result of trauma. Less than 2% of amputations are related to cancer (Amputee Coalition of America, 2014). The prevalence of amputation rises steeply with increased age; approximately two-thirds of amputations occur in patients who are at least sixty years old (Atherton & Robertson, 2006). In the studies performed on body image in amputees by Dr. James Breakey (1997), Holzer, Sevelda, Fraberger, Bluder, and Kickinger (2014), Coffey, Gallagher, Horgan, Desmond, and MacLachlan (2009), and Atherton and Robertson (2005), it was discovered that amputees generally disclose negative feelings regarding their bodies. When an individual has a limb amputated, the person tends "to compare the appearance of his or her body and functional capabilities to others'," which makes it difficult "for the amputee to have a positive attitude toward his or her body" (Breakey, 1997, p. 58-59). Due to this, it is thought to potentially lead to a long-term disorder in an individual's body experience (Breakey, 1997). However, prosthetic devices have been used for hundreds of years to assist amputees in preserving their quality of life and supporting them in their activities of daily living. Great strides have been and are being made by increasingly skilled and educated prosthetic professionals that positively affect the ever-demanding user population (Cochrane, Orsi, Reilly, 2001).

Few studies have been reported in the literature in the area of research on body image and the amputee.

> Compounding the problem is the general public's misconception about prostheses and their function. For example, media hype of amputees running in the Boston Marathon or climbing mountains colors viewers' perceptions, preventing them from fully realizing the emotional impact this loss can have on the individual (Breakey, 1997, p. 58).

The need for emotional support is where nurses and other healthcare professionals can help improve this problem. Due to the belief that individuals must face a sequence of confrontations in order to adjust to disfigurement, the significance of social and family support in the process of adjusting to a changed appearance should be stressed. Nurses should assess and be concerned with psychological issues in their patients. It is crucial that they provide support "to encourage patients to confront their injuries and gradually expose disfigurements to the public" because this can have "a very positive effect when helping patients to adjust" (McRobert, 2012, p. 30).

The research question that will be addressed is as follows: What is the impact of amputation on body image? As explained above, there is a need for this study because little research has been done on this topic. Most of the research that has been performed focuses on a very specific group of amputees such as amputees who lost a limb secondary to diabetes or as a result of being in combat. The objective is to gather information in an effort to increase healthcare professionals' knowledge regarding the psychological effects on a person who has lost one or more limbs.

Chapter 2: Literature Review

Amputation

Undergoing an amputation involves facing major challenges (Atherton & Robertson, 2006). "Amputation causes a threefold loss in terms of function, sensation, and body image" (Breakey, 1997, p. 58). It inevitably leads to reduction in physical abilities, which is likely to have significant effects on employment, and that can cause financial difficulties, isolation, and decreased self-esteem. Also following amputation, intimate relationships may be jeopardized with common marital failure and frequently experienced sustained pain. A study by Atherton and Robertson (2006) suggests that nearly 60-80% of amputees are faced with phantom limb pain episodes, and residual limb pain appears to be a very regular occurrence in the immediate post-operative period. Given the various challenges and experiences of loss, it is not hard to believe that adjustment to amputation can trigger psychological distress in an individual (Atherton & Robertson, 2006). An individual is expected to adapt to his or her changed appearance. In many cases, successful adaptation does not occur, and amputation is associated with depression, anxiety, social discomfort, and body image anxiety (Coffey, Gallagher, Horgan, Desmond, and MacLachlan, 2009).

Prosthetics

Prosthetics is very closely related to amputation, as it is oftentimes what is done to compensate for the lost limb. Prosthetics is defined as the making and fitting of artificial body parts; therefore, a prosthesis is an artificial body part (Gailey, 2011). Approximately 68-88% of amputees wear their prosthesis at least seven hours each day to assist them in mobility and help them perform their activities of daily living (Gailey,

2011). Prostheses are more likely to be worn and utilized when they belong to males who are well educated. African American race, low educational achievement, unemployment, illness as a result of diabetes mellitus and peripheral vascular disorder, and experiencing phantom pain have been recognized as predictors of prosthesis non-use. One's everyday activities are restricted when the prosthetic limb is not used (Murray, 2009). In addition to serving functional needs, the prosthesis also acts as a device to hide the amputation and to reinstitute an intact body image to the individual. "The use of a prosthesis could be an important tool and mediator between disability and emotional well-being" (Horgan and MacLachlan, 2004, p. 843). Using a prosthesis has the potential for significantly increasing one's psychological health and also improving body image with limb loss (Murray, 2009).

The primary role of the prosthetist is to create a replacement limb to help the patient attain the best possible gait performance keeping in mind maximum comfort (Andres and Stimmel, 1990). An additional responsibility of the prosthetist is deciding which componentry will best suit the amputee. The componentry includes the knee, foot, and suspension. The type of knee and foot are chosen based on the patient's K-level, or activity level, as defined by the American Academy of Orthotics and Prosthetics (K. Gilg, personal communication, March 15, 2015).

Body Image

"Body image [is] a (sometimes conscious) system of perceptions, attitudes, beliefs, and dispositions pertaining to one's own body" (Mills, 2013, p. 786). The notion of body image is exceedingly personal. Body image is not fixed; it develops and evolves with pivotal life experiences. Just as countless variables influence the development of

normal body image, there are a multitude of variables that are responsible for altering body image (Green, 2008). When an individual is incapable of adapting to change, he or she experiences an altered body image (McRobert, 2012).

A person's body image is threatened by change in appearance or by a functional change of a body part, which explains the reasoning behind altered body image in individuals who suffer with a chronic condition that adjusts appearance. Many people make additional changes in an effort to conceal or mask the alterations in their appearance. The inconsistency between body ideal and body reality can create a negative body image and similar negative effects on confidence and motivation (Green, 2008). For example, a person with altered body image may limit social interactions because of feelings of uncertainty regarding "how to behave, fearing causing offence and wanting to avoid unpleasant situations" (Bowers, 2008, p. 95).

There is a desire to be normal, and oftentimes, this desire leads to difficulty during the adjustment of body image. Society puts pressure on its members to adhere to a particular image, and because of that, it is a major factor in the development and maintenance of body image (Green, 2008). Adjustment in this type of situation relies on the extent of disfigurement, the emotions associated with the changed appearance, the comfort level felt when interacting with others, and the amount of support received (Bowers, 2008). "Adjusting to the change in body image demands strength, perseverance and determination from the individual, coupled with the understanding and support from family and friends" (Green, 2008, p. 16). It is thought that one can successfully recover from this alteration by confronting society and revealing changed features. It is crucial to

have the support of friends and family during the process of body image adjustment (McRobert, 2012).

Current Studies

In a study completed by Dr. James Breakey (1997), ninety males with unilateral lower-limb amputations due to trauma completed a 110-item questionnaire consisting of demographic information and five different scales that measured body image, self-esteem, nonpsychotic depression, clinical anxiety, and satisfaction with life. The study demonstrated positive correlations between body image and self-esteem, anxiety, and depression. This suggested an amputee's evaluation of his body image could influence these variables in either a positive or negative manner. There was also significant correlation between body image and life satisfaction, indicating the more negative an amputee feels about his body image, the less satisfied he is with his life. This study supported the notion that a relationship exists between negative body image and lower psychosocial well-being. Those who were more worried about their body image had markedly higher scores than those individuals who were less concerned. All of these findings strengthen the understanding of the psychological effects amputation can have on an individual (Breakey, 1997).

In a different study by Holzer, Sevelda, Fraberger, Bluder, and Kickinger (2014), the sample included 298 male and female patients (149 unilateral and bilateral lower-limb amputees and 149 controls). Demographic data was collected, and patients received a 118-item questionnaire including three surveys regarding body image, self-esteem, and quality of life. Results of this study showed that individuals with lower-limb amputations have decreased levels of body image and quality of life. Body image and quality of life

values were undoubtedly lower in amputees than in the control population. However, self-esteem values were comparable. Self-esteem seems to be independent and not affected by lower-limb amputation (Holzer, Sevelda, Fraberger, Bluder, and Kickinger, 2014).

In a study regarding diabetes-related lower limb amputation by Coffey, Gallagher, Horgan, Desmond, and MacLachlan (2009), thirty-eight participants completed three psychological self-report assessments: the Trinity Amputation and Prosthesis Experience Scale, the Hospital Anxiety and Depression Scale, and the Amputation Body Image Scale. Over eighteen percent of the participants scored above the normal range for both anxiety and depression; this percentage is remarkably higher than what would be found in the general population. Anxiety was significantly correlated with depression and body image. Depression also had a significant relationship with body image disturbance. Additionally, significant correlations were found between body image disturbance and three measures of adjustment including general, social, and limitation adjustment (Coffey et al., 2009).

The last study, by Atherton and Robertson (2005), included sixty-seven adult lower limb prosthesis users who had experienced amputation within the last five years. Participants completed surveys dealing with anxiety, depression, self-consciousness, appearance, and amputation and prosthesis experience. Prevalence of anxiety was 29.9%, which compares to rates of 12.6% in the general population. The prevalence of depression was somewhat lower at 13.4%, while the general population prevalence was about 3.6%. Low but significant correlations were found between public self-consciousness and anxiety, depression, and psychosocial adjustment to amputation. Also,

public self-consciousness is correlated with body image vulnerability. In contrast, private self-consciousness was not associated with any of these variables. Findings revealed that appearance-related beliefs were associated with both distress and psychosocial adjustment difficulties (Atherton and Robertson, 2006).

Although there are several studies regarding amputation affecting body image, the main focus of the articles described has been on the relationship between body image and other psychological factors, specifically anxiety and depression. The proposed study will concentrate on the relationships between demographic data and body image, such as how the duration of amputation and the cause of amputation relate to body image. It is important that this research study be done in order to look at a broader group of amputees and apply what is found to taking care of patients in the healthcare setting. It appears that only when psychological issues are resolved, are amputees likely to be able to derive full benefit from the prosthesis service and regain their self-esteem (Atherton and Robertson, 2006).

Chapter 3: Methodology

Sample and Procedure

The purpose of the study is to find out how amputation affects body image. An exploratory, descriptive design was used for this study. The sampling method utilized was a convenience sample, which is typically used when "researchers [are] seeking people with certain characteristics" (Polit and Beck, 2008, p. 341). A portion of the participants was recruited from a prosthetic clinic in the Southeast region of the United States while the others were followers of the Amputee Coalition of America Facebook page. The participants had to be at least twenty-one years of age. Those who completed

the packet were informed that by mailing in or submitting the packet, they were verifying that they met this age requirement. This study did not include people who have above or below the elbow amputation due to limited access.

Data was collected in the form of demographics and a survey, and consent was obtained. The demographic information included a) participant gender, b) how many lower limbs had been amputated, c) when the limb(s) were amputated, d) why the limb(s) were amputated, e) the level of the amputation(s), f) whether the participant wore a prosthesis(es), g) how many hours each day the prosthesis(es) was worn, and h) the participant's activity level. The survey used was the Amputee Body Image Scale (ABIS). There were instructions for the participants for both the demographics and the survey. The instructions on the demographics were to answer the questions by circling/checking the most appropriate response. The directions on the survey asked the participants to answer each item as carefully and accurately as possible by selecting what they deemed the appropriate response for each statement. The participants were ensured that participation was completely anonymous and voluntary, they had a right to withdraw at any time, and there were no wrong answers. Those who were patients at the prosthetics clinic were mailed a packet and asked to return it in the included stamped envelope. The prosthetist of the clinic called the patients to ask them to complete the packet; they were collected for three weeks. The followers of the Amputee Coalition of America Facebook page clicked a link to fill out and submit the demographics and survey online. This data was collected through Qualtrics for ten days.

Approval from the Institutional Review Board (IRB) was attained for this research study. A power analysis revealed that in order for an effect of this size to be

detected (0.8) as significant at the 0.05 level, a sample of 122 participants would be required. The total sample size was 228. The sample size was adjusted to 207 due to missing data. There were 112 males and 92 females (three did not disclose their gender).

Instrumentation

Dr. James Breakey created the Amputee Body Image Scale in a 1997 study. The ABIS was used in this study because a review of the literature revealed it to be the only scale designed to assess the body image of an amputee. It is a twenty-item Likert scale that is designed to measure how one sees and feels about his or her body image. The subjects were asked to indicate their responses to the questions using the following scale: (1) none of the time, (2) rarely, (3) some of the time, (4) most of the time, and (5) all of the time. This scale produces scores that range from 0 to 100, where low scores indicate the relative absence of a body image concern, and higher scores indicate the presence of a more severe problem. Three of the questions are reverse-scored.

The scale's validity has been affirmed. Breakey reported the reliability of this scale to be 0.88. The current study computed a Cronbach's alpha, which resulted in 0.92. Nunally (1978) states that research instruments should have reliability of 0.70 or greater. Therefore, the Amputee Body Image Scale is considered reliable. The scale was shown to the prosthetist to determine face validity; he asked that the terminology "stump" be changed to "residual limb." Dr. Breakey, who created the Amputee Body Image Scale, approved this adaptation.

Data Analysis

Analysis was computed using descriptive statistics and univariate analysis of variance. Data was analyzed using IBM SPSS Statistics version 20.

Chapter 4: Results

Statistics revealed that 194 participants (93.7%) had one lower limb amputation, while the other thirteen participants (6.3%) had bilateral lower limb amputations. When asked about using a prosthesis, 196 participants (95.1%) reported that they did wear a prosthesis; ten (4.9%) did not wear one. The researcher examined the amount of time lapsed since the participant had an amputation. Findings are found in the table below.

Table 1: Frequencies and Percentages – Time since amputation of first limb

Time since limb lost	Frequency	Percentage
0-5 years ago	103	49.8%
6-10 years ago	26	12.6%
11-15 years ago	14	6.8%
15-20 years ago	13	6.3%
20 or more years ago	51	24.6%

One of the variables examined was the reason for the participant's amputation. Findings are included in the table below.

Table 2: Frequencies and Percentages – Reason for amputation of first limb

Reason for amputation	Frequency	Percentage
Diabetes	16	8.0%
Vascular	27	13.5%
Military	12	6.0%
Trauma	99	49.5%
Congenital	6	3.0%
Other	40	20.0%

The researcher also examined the level of the participant's amputation. Findings are displayed in the table below.

Table 3: Frequencies and Percentages – Level of amputation(s)

Level of amputation(s)	Frequency	Percentage
Above the knee	77	37.2%
Below the knee	124	59.9%
Both	6	2.9%

A one-way between subjects ANOVA was conducted to compare the effect of gender, number of limbs amputated, length of time since amputation, reason for amputation, level of amputation, prosthesis use, and activity level on body image. A higher score on the Amputee Body Image Scale reflects poor body image, and a lower score indicates an absence of body image concern. Statistical significance was found in three variables: number of limbs amputated, length of time since amputation, and reason for amputation.

The researcher examined how the number of lower limbs amputated affects one's body image using the Amputee Body Image Scale. Findings are included in the table below.

Table 4: Descriptive Statistics – Number of lower limbs amputated

Number of limbs lost	Mean	Standard deviation	N
1	48.95	16.59	194
2	58.62	16.03	13
Total	49.56	16.68	207

There is a significant difference in scores by number of limbs lost $F(1, 205) = 4.15$, $p = .043$. Respondents with two limbs lost were higher in their score than those with only one limb lost, which indicates that those with two amputations had a lower body image than those who only had one amputation.

Since body image changes over time, one of the aspects the researcher studied was the impact of time since the participant's first amputation on body image. Findings are displayed in Table 5.

Table 5: Descriptive Statistics – Time since amputation of first limb

Time since 1st limb lost	Mean	Standard deviation	N
0-5 years ago	50.99	17.35	103
6-10 years ago	58.54	18.07	26
11-15 years ago	42.57	14.65	14
15-20 years ago	49.23	8.23	13
20 or more years ago	44.10	14.37	51
Total	49.56	16.68	207

There is a significant difference in scores by time since amputation F (4, 202) = 4.316, p = .002, eta square = .079. The post hoc tests indicate that those losing the limb six to ten years ago had a lower body image than those who lost their limb eleven to fifteen years ago and more than 20 years ago.

With various reasons for amputation found in the literature, the researcher examined the effect the reason had on one's body image. Findings are found in the table below.

Table 6: Descriptive Statistics – Reason for amputation of first limb

Reason for 1st amputation	Mean	Standard deviation	N
Diabetes	46.06	12.55	16
Vascular	59.07	13.81	27
Military	51.42	23.32	12
Trauma	50.10	17.28	99
Congenital	38.17	9.99	6
Other	46.55	14.87	40
Total	50.00	16.70	200

Body image is lowest in participants who reported vascular reasons for their amputation as compared to the highest body image being in those who reported

congenital reasons. There was a significant difference in score by reason for amputation $F(5, 194) = 2.861$, $p = .016$, eta square = .069. Post hoc tests revealed that body image is lower in those who lost limbs to vascular conditions and higher in those who had amputations as a result of other reasons.

Chapter 5: Conclusion

The purpose of this research study was to determine the impact of amputation on body image. More specifically, the goal was to learn how gender, number of lower limbs amputated, length of time since amputation, cause of amputation, level of amputation, whether the patient wears a prosthesis and how many hours each day, and activity level affect the way one views himself. Most previous studies have correlated body image in very specific groups of amputees with variables such as anxiety, depression, and self-esteem. This study did not have any specific requirements other than the participants had to have lower limb amputations; there would have been limited access to upper limb amputees. Research was performed on a wider range of amputees in order to obtain information that applies to individuals with lower limb amputations as a whole rather than the data only having relevance when taking care of a particular subset of amputees.

Discussion

The research revealed that there was not a remarkable difference between the effect amputation had on body image when comparing males and females. The study found that the level of amputation also did not affect one's body image. There was no significance in body image between those who had their limb(s) amputated above the knee and those with amputation(s) below the knee. In this study, body image was not directly related to the number of lower limbs amputated. According to the data collected,

whether an amputee wears a prosthesis or not, body image is not significantly altered. An amputee's activity level, whether immobile or athletic, did not affect body image in this research study. Although this demographic data was found to be insignificant, it should not be ignored in further research or when caring for amputees.

Findings from this study indicate that body image is significantly lower in individuals who have lost two lower limbs compared to those who have only had one lower limb amputated. This is a finding that was not disclosed by any previous research studies. Those with bilateral lower limb amputations could have marked mobility problems. Decreased mobility may cause a person to lose his job, which could lead to financial instability and possible relationship strain. A person who has lost both legs would most likely be unable to drive; social interaction and leisure activities may be limited and hard to arrange. Individuals who have only had one lower limb amputated have an increased chance of keeping a job that requires mobility, and driving is very much possible with one functioning leg. These are reasons why body image is notably lower in those who have had both lower limbs amputated.

Another finding of this research study indicates that people who had their limb amputated six to ten years ago have the lowest body image when compared to other time frames such as the zero to five year range or an amputation more than ten years ago. This finding has also not been mentioned in any other related studies. Body image was found to be higher in the first five years after amputation than the period of time six to ten years following the amputation. Individuals may experience relief during this initial post-amputation period – relief of whether amputation would be the right decision, relief of stress of impending procedure, and relief of pain and debilitation resulting from condition

that required amputation. The new amputee may see a prosthetist and decide to begin the process of having a prosthesis made; this can be encouraging and empowering. After those first few years, the client may be confronted with obstacles such as impaired mobility with or without a prosthesis, role conflicts, and ultimately, the inability to function in the same manner as was previously possible. These are possible stumbling blocks that can be overcome but may bring down one's body image. Once the six to ten year post-amputation period passes, body image increases. Individuals learn how to adapt and function in as similar a capacity as before the amputation. The prosthesis may become more familiar and easier to use, which can positively affect physical and psychological aspects of one's life. Role conflicts, lack of social interaction, and financial status may improve. According to the research, once an individual gets through the six to ten years after amputation, body image only gets better. It is important to note that not all amputees are the same, and this trend in body image may vary by person.

This study also indicated that there was a significant relationship between the body image of those who lost their limbs due to vascular issues and those who had amputations as a result of other causes that were not listed. Perhaps, the concept of "other" was confusing or unclear to participants. For example, one participant circled other as the cause of his or her amputation and wrote out to the side that a tree fell on him. However, this would be considered trauma. A conclusion cannot accurately be drawn since there was not a place for participants to explain what they meant when selecting other.

Implications for Nursing

The findings of this research study directly impact nurses. Nearly all nurses work in settings that allow them to work with amputees; examples of these settings include primary care clinics, immediate care facilities, and various hospital units. While the physical care regarding the residual limb and potential medications for underlying pathology may be comparable between individuals, the psychological care of these patients should be individualized. Knowing that the number of amputations, the length of time since amputation(s), and the cause of amputation(s) result in differing levels of body image disturbance can help the nurse get a feel for his or her patient's psychological status. Amputees need encouragement and support as undergoing an appearance-related change oftentimes results in increased anxiety and depression and decreased body image (Coffey et al., 2009). Both immediately post-amputation and also at any other time of care, the nurse should assess the patient's psychological status and implement interventions to address and attempt to control negative feelings and emotions.

Nurses should be aware that patients with two lower limb amputations may have lower body image and more psychological deficits than a patient who had one lower limb amputated. They should understand that patients who underwent amputations six to ten years prior have the lowest body image, possibly due to facing obstacles and realizing limitations. Also, nurses should recognize that the reason for the amputation could elicit a certain degree of body image disturbance but may vary between patients. Understanding these findings allows a nurse to be one step ahead in assessment of her patient.

Limitations

Some participants who completed the survey on paper left answers blank. It was not possible to leave out answers in the survey online. Questions could have been scored incorrectly on both paper and online surveys in the event that the participant did not understand the directions. Another limitation of this study is the use of the Internet; there is a chance that those who completed the survey posted on the Amputee Coalition of America Facebook page were not amputees. Participants may not have answered the survey to the best of their ability if they were in a hurry to get it submitted. Additionally, although anonymity was promised, people may not have been completely honest in their answers because they did not want it to be known that they are not coping well with their amputation.

With regards to the design of the study, an additional limitation is that "other" was listed as a cause of amputation for participants to select if the reason for their amputation was not the result of a listed category. This was significant information but nothing could be done with it due to the fact that the participants were not given the opportunity to indicate what other meant to them.

Recommendations

Future researchers could increase the knowledge of this subject by performing a near identical study that focuses on additional demographic information such as age, weight, ethnicity, and/or socioeconomic background. The difference in body image between lower extremity amputations and upper extremity amputations is recommended if access to an adequate population of upper extremity amputees can be obtained. While this study had enough participants to consider the data and results reliable and valid,

more participants would be beneficial. Surveying individuals online is recommended because it decreases the number of surveys returned with answers left blank. Online survey websites allow the researcher to require certain or all answers to be completed before submission is possible.

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Appendices

Appendix A: Cover Letter

Dear Sir or Madam:

I am in the Honors College and a senior in the nursing program at the University of Southern Mississippi. I am conducting a research study to determine the impact of amputation on body image.

Thank you for taking the time to complete this survey. Your feedback is important in helping to gather information from amputees about their body image and how they view themselves in an effort to increase healthcare professionals' knowledge regarding the psychological effects on a person who has lost one or more limbs. This survey should take approximately 5 to 10 minutes of your time to complete.

Your participation is completely anonymous and voluntary. If you choose not to participate or withdraw from the study at any time, there will be no penalty. Completing the survey or not completing the survey will not affect the care you are currently receiving from your healthcare provider.

In the event that this survey triggers negative emotions, please schedule an appointment with your primary care physician. If you do not have a primary care physician, you can call the 24/7 Crisis Support Hotline at 775-784-8090 or text ANSWER to 839863. Veterans may use the Veteran Crisis Line by calling 1-800-273-8255 or sending a text message to 838255.

The researcher may use the results of this study at scientific conferences or in publications. Please answer the questions the best you can. To help me meet my deadline, please return the survey as soon as possible (preferably within 3 to 5 days) in the provided postage paid envelope. Do not include your return address on the envelope. If you have any questions concerning the research study, please contact me.

This project has been reviewed by the USM Institutional Review Board, which ensures research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board at (601) 266-5997.

Sincerely,

Anna Catherine Gilg
Phone: 850-380-3413
Email: Anna.Gilg@eagles.usm.edu

Appendix B: Demographic Questions

Thank you for participating in this study. Participation is completely anonymous and voluntary. You have the right to withdraw at any time. You may use a pen or pencil to circle or check the appropriate answers. Please answer each question the best you can. There are no wrong answers. It is important that you answer each question as you really feel. By returning the survey, you are agreeing that you are at least 18 years of age, that you have read the explanation of the study, and that you agree to participate in the study. Thank you for helping in this research study!

Please answer the following questions by circling/checking the most appropriate response:

1. What is your gender? Male Female

2. How many lower limbs have you had amputated? 1 2

3. When did you lose your first limb?

   0-5 years ago 6-10 years ago 11-15 years ago
   15-20 years ago 20 or more years ago

4. When did you lose your second limb?

   0-5 years ago 6-10 years ago 11-15 years ago
   15-20 years ago 20 or more years ago N/A

5. How did you lose your first limb?

   Diabetes Vascular (circulation) Military (service-related injury)
   Trauma (accidents, etc.) Congenital (at birth) Other

6. How did you lose your second limb?

   Diabetes Vascular (circulation) Military (service-related injury)
   Trauma (accidents, etc.) Congenital (at birth) Other
   N/A

7. What is the level of your amputation(s)?

   Above the knee Below the knee Both

8. Do you wear a prosthesis? Yes No

9. If so, how many hours do you wear your prosthesis?

   Up to 3 hours 3-6 hours 6-9 hours
   9-12 hours Over 12 hours

10. How would you describe your activity level?

   ☐ Not able to walk in the home or community
   ☐ Walk inside home only
   ☐ Walks inside the home and performs *minimal* activities outside the home
   ☐ Walks inside the home and performs *moderate* activities outside the home
   ☐ Leads a very active lifestyle inside and outside the home

Appendix C: Amputation Body Image Scale Questions

The Amputee Body Image Scale is designed to measure how you see and feel about your body image. It is not a test so there are no right or wrong answers. **Please answer each item as carefully and accurately as you can by placing the appropriate response beside each statement.**

Responses

1 = None of the time
2 = Rarely
3 = Some of the time
4 = Most of the time
5 = All of the time

1. _____ Because I am an amputee, I feel more anxious about my physical appearance in social situations than when I am alone.
2. _____ I avoid wearing shorts in public because my prosthesis would be seen.
3. _____ I like my overall physical appearance when wearing my prosthesis.
4. _____ It concerns me that the loss of my limb impairs my body's functional capabilities in various activities of daily living.
5. _____ I avoid looking into a full-length mirror in order *not* to see my prosthesis.
6. _____ Because I am an amputee, I feel anxious about my physical appearance on a daily basis.
7. _____ I experience a phantom limb.
8. _____ Since losing my limb, it bothers me that I no longer conform to society's ideal of normal appearance.
9. _____ It concerns me that the loss of my limb impairs my ability to protect myself from harm.
10. _____ When I am *not* wearing my prosthesis, I avoid situations where my physical appearance can be evaluated by others (e.g., avoid social situations, swimming pool or beach activities, physical intimacy).
11. _____ The loss of my limb makes me think of myself as *disabled*.
12. _____ I like my physical appearance when *not* wearing my prosthesis.
13. _____ When I am walking, people notice my limp.
14. _____ When I am wearing my prosthesis, I avoid situation where my physical appearance can be evaluated by others (e.g., avoid any social situations, swimming pool or beach activities, physical intimacy).
15. _____ People treat me as disabled.
16. _____ I like the appearance of my residual limb.
17. _____ I wear baggy clothing in an attempt to hide my prosthesis.
18. _____ I feel I must have four normal limbs to be physically attractive.
19. _____ It is important that the size of my prosthesis and remaining anatomy of the affected limb are the same size as the other limb.
20. _____ I avoid looking into a full-length mirror in order *not* to see my residual limb.

Thank you for participating in this study! Your responses will help researchers better understand how amputees feel regarding their body image and also increase healthcare professionals' knowledge about the psychological effects on a person who has lost one or more limbs. **Please return in the postage paid envelope provided.**

Appendix D: IRB Approval

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15093002
PROJECT TITLE: The Impact of Amputation on Body Image
PROJECT TYPE: New Project
RESEARCHER(S): Anna Gilg
COLLEGE/DIVISION: College of Nursing
DEPARTMENT: Collaborative Nursing Care
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Exempt Review Approval
PERIOD OF APPROVAL: 10/12/2015 to 10/11/2016
Lawrence A. Hosman, Ph.D.
Institutional Review Board